ILLINOIS BUSINESS REVIEW

A MONTHLY SUMMARY OF BUSINESS CONDITIONS FOR ILLINOIS

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HIGHLIGHTS OF BUSINESS IN OCTOBER

Business activity was further curtailed in October by the steel strike. Industrial production fell, after seasonal adjustment, to 148 percent of the 1947-49 average, 1 point below September. Unemployment rose contraseasonally to 3.3 million, and employment advanced to 66.8 million, raising the adjusted rate of unemployment from 5.6 percent to 6.0 percent.

On October 20 the Administration asked the courts for a Taft-Hartley injunction to halt the steel strike during an 80-day "cooling off" period after a three-man fact-finding board had reported that the issue between the union and the steel companies centered on the latter's insistence upon changes in work rules. In early November the Supreme Court upheld issuance of the injunction by the district court, bringing the strike to an end. However, it is apparent that business activity in the remainder of the fourth quarter will continue to be restricted by the steel shortage.

Auto Sales High

Automobile dealers sold an estimated 527,000 cars in October, a new high for the month. This figure amounted to an average of 19,500 per selling day, but during the final third of the month daily average sales declined to 18,900 from 21,875 in the middle third. Dealers were reported to be insisting on higher prices because of anticipated reductions in supplies of new cars arising from steel shortages. Unofficial estimates placed dealers' stocks of new cars near 580,000, more than a month's supply at the October selling rate.

Production of American-made cars amounted to 507,600 units, nearly double the September output and that of October a year ago. However, production in November will be down sharply because of the steel strike.

Inventories Down, Sales Up

Continuing the liquidation started in August, the book value of manufacturing and trade inventories declined $350 million to $89.1 billion in September, after seasonal adjustment. All of the contraction was in stocks of durable goods manufacturers, which fell to $29.8 billion, and was largest in the fabricated metal, motor vehicle, and other transportation equipment industries. Stocks of retailers held steady at $24.8 billion, although holdings of durables fell slightly while those of nondurables rose. Wholesalers' inventories showed little change at $12.5 billion.

Manufacturing and trade sales increased an adjusted $400 million during the month to $59.9 billion. Shipments of manufacturers rose from $29.2 billion in August to $29.6 billion in September, most of the gain occurring in nondurables. Sales of wholesalers advanced $300 million to $12.5 billion, while those of retailers fell the same amount to $17.8 billion. All the gain made by the former group was in nondurables, and all the loss of the latter was in durables.

Reversing a decline of 6 percent in August, new orders received by manufacturers in September rose 5 percent to an adjusted $30.6 billion. Orders for durables were up 7 percent, and those for nondurables advanced 4 percent.

Construction Continues Slide

After seasonal adjustment, estimates of new construction outlays indicated a decline of $163 million in September, the fourth since May. The adjusted September total of $4.4 billion was down 4 percent from August. The drop was about evenly divided between private and public work, with all major categories of each sharing in it. Private residential building was down an adjusted $130 million, or 7 percent, from the May high. Private nonresidential building, which in August reached a high for the year of an adjusted $772 million, was off 5 percent. A reduction of $38 million in highway outlays accounted for nearly half of the fall in public construction expenditures.

Instalment Debt Up Again

Consumers added $485 million to their outstanding instalment debt in September after allowance for seasonal factors. This was the seventh straight monthly increase and brought the total to $37.5 billion, 13 percent above the year-earlier figure. Obligations in the form of automobile paper rose an adjusted $195 million, about the same as in August, as extensions and repayments showed little change. As a result, consumers owed $16.3 billion on car purchases at the end of the month, also 13 percent above September 30, 1958. Other consumer goods paper increased $94 million and personal loans were up $170 million, bringing the total outstanding of each to about $9.4 billion.

Noninstalment debt showed little change on an adjusted basis, as increases in single-payment loans and service credit were largely offset by reductions in charge accounts. Total consumer debt at the end of September amounted to $48.4 billion, equivalent to 14 percent of disposable personal income.

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Intensified World Competition

Concern over our foreign economic position has called forth efforts to bolster exports. A "Buy American" proposal is being bandied about in Washington, to compel recipients of aid funds to spend them in this country. Where this cannot help, we are reduced to pleading that other countries take over part of the foreign aid burden or take more of our goods by reducing trade barriers.

Our balance of international payments has turned distinctly adverse during the past year, continuing a downward trend that dates from the Suez bulge of early 1957. Exports of goods and services excluding military transfers have dropped back to the pre-Suez level of early 1956. Imports have risen to a new high rate, exceeding exports by a small margin in the second quarter. Since the latter part of 1958, foreigners have been accumulating gold and dollars at an annual rate of almost $4 billion, exclusive of our $1.4 billion capital contribution to the International Monetary Fund. As the counterpart of this, exports of other industrial countries have been booming, and the improvement in their balances has made possible further easing of trade and exchange restrictions.

Shifting in Competitive Conditions

To some extent these developments reflect transitory factors tied to short-term cyclical or pre-strike conditions, but their more important aspects derive from the basic shifts in economic conditions that have occurred since the end of the war. In the days of the "dollar gap," when this country was the only one capable of high-level production, it did not make much difference where the exchange rates were set. Everyone wanted our goods — and the dollars to buy them — and making them expensive was one way to restrict demand. Now our goods remain expensive but other countries have rebuilt and expanded their economies, and the relative price advantage they enjoy will increasingly channel trade away from us.

This is an almost classic example of being priced out of world markets. It was known when the exchange rates were set that costs are lower in other countries. Some of the differences applied only to commodities that did not enter world markets, so that our trade was not immediately affected. Over the longer term it has been possible for other nations to transfer low-cost resources, particularly labor, into producing new products, improving quality and thus increasing their exports; and in many cases, the adoption of new, highly efficient techniques has strengthened their ability to compete.

With rehabilitation relatively complete, Europe and Japan have become competitive enough to take over markets in third countries and even to invade our domestic market for products in which we were dominant. When our manufacturers sought steel supplies abroad as strike protection, they found it not only available, but also cheaper. Earlier, the upsurge in auto imports and the low bids of foreign producers on contracts for heavy electrical equipment had gained attention. Optical goods, petroleum, textiles, and some chemicals provide other examples of competition we cannot readily meet. We are still competitive in many products but the list is narrowing.

In the older theory of international trade under fixed exchange rates, the loss of export markets and the gold outflow would bring about an adjustment by forcing deflation in the high-priced country. However, we have no means of reducing domestic prices; they ordinarily fall only in depressions. Furthermore, if they are high in terms of other currencies, it is largely due to the accidents of setting exchange rates in special postwar circumstances. Just this year France gained an additional advantage by devaluation. Hence, deflation here cannot be considered an acceptable solution. It would benefit neither us nor our competitors, and there is no reason we should accept a policy they would unhesitatingly reject.

Proposed Solutions

What is likely to result from this situation if no other solution can be found is a new drive for protectionism. Such a development would have serious repercussions throughout the Western world. Prosperity in most countries embodies large elements of cyclical instability, and any reversal of the postwar trend toward trade expansion might turn the investment cycle down.

Proposed solutions either provide inadequate relief or impose other disadvantages. After the recent British reduction of trade or exchange restrictions, there is not much more to be gained from such measures. The "Buy American" proposal is superficial; it would have little effect if countries receiving aid made offsetting shifts in the use of other funds at their disposal.

Cutting the aid program offers no simple solution. There can be little question about the continuing needs of underdeveloped countries, and political considerations have to be taken into account. As an alternative, part of the aid program might be turned over to other industrial countries. In either case, part of the reduction in our payments would be reflected in our exports, and recipient countries would be likely to divert some subsequent buying also. Our competitive disadvantage would be aggravated as repeat and replacement business shifted.

Last year, widely circulated rumors held that we were going to devalue the dollar by raising the price of gold. But changing the price of gold would accomplish nothing if other countries did the same. What is needed to change relative prices is a change in exchange rates. Any such adjustment would have to be negotiated, and the complexities of negotiation are inestimable.

Fortunately, this is not a matter of immediate urgency. If the problem is basic enough to require action, however, it would be desirable to make a start in a period of prosperity. After a general letdown, any proposed devaluation would represent a "beggar-thy-neighbor policy" and call forth reactions like those of the 1930's. As a prelude, a detailed, up-to-date analysis of relative prices might be undertaken to provide a reasonable basis for determining positions when the time comes. VLB

COOPERATIVE SAVING AND LENDING

The idea of people pooling their savings in order to lend to each other was conceived more than a century ago in Germany as a means of protecting the poor from unscrupulous moneylenders. From Germany, it spread throughout Europe and to many areas of Asia during the latter half of the nineteenth century. The credit cooperative (or credit union) movement reached North America by 1900, taking hold first in Canada and then in the United States. This country's first credit union was established in New Hampshire in 1909.

The greatest growth of credit cooperatives in the United States, however, has occurred in the past three decades. Since 1929, when there were only 974 such organizations with 265,000 members, credit unions have been increasing at an average rate of 660 new organizations a year. The rapid rise of these organizations in this period has made the United States the world's leading nation in cooperative lending.

Credit Cooperatives Today

Last year there were more than 19,000 credit unions in this country, with a total membership of 10.7 million persons. Total assets, which were $4.4 billion in 1958, have nearly doubled since 1954 and have risen ninefold since 1946.

All credit unions are chartered either by a state or the federal government and are supervised by the chartering agency to ensure financial stability of the organization. Nearly nine-tenths of all unions have assets privately bonded up to a maximum of $2 million. The federal government began chartering credit unions in 1934. In addition, all but four states have some type of credit union legislation. The 19,000 are almost equally divided between those with state charters and those with federal charters. In Illinois, however, nearly 90 percent of the unions are state-chartered and are supervised by the Department of Financial Institutions.

Credit union members come from all walks of life. However, all of the chapters are made up of persons associated through some common activity or bond, such as membership in an economic, social, or religious group. The major areas of organization are manufacturing (37 percent), government (14 percent), transportation and other public utilities (10 percent), educational institutions (6 percent), church groups (6 percent), trade (5 percent), and labor unions (5 percent). It is evident that wage and salary workers are the most numerous participants in credit unions; nearly three-fourths of all the unions in 1958 were organized by employee groups.

A greater proportion of the savings placed with these unions is borrowed by members than in most other countries. In 1958, the average loan amounted to 80 percent of the borrower's savings in his credit union, compared with only 64 percent in Canada and 62 percent in Germany, the second and third largest credit union nations. Credit unions here had nearly $3.2 billion in loans outstanding last year and $3.9 billion in savings.

Credit unions are forbidden by law to charge more than 1 percent a month on the unpaid balance of any loan, and many unions charge less than this amount. Unions are able to keep charges at a relatively low level because of: (1) the donated services of members, (2) the limited overhead expenses, and (3) the intimate knowledge of loan applicants.

Credit unions accounted for only a small fraction (7 percent) of total consumer instalment credit last year, but they have been the most rapidly growing lending agency in the country during the past decade. For example, their instalment credit loans (the predominant type of credit union loan) increased more than 400 percent to $2.5 billion between 1949 and 1958. Those of sales finance companies, the second fastest growing agency, rose by 250 percent.

Illinois — First in Credit Unions

Illinois has been a major credit union state since the 1930's. The first credit union appeared in the State shortly after the Illinois Credit Union Act was passed in 1925. By 1930, there were 50 such organizations. Since that time, Illinois credit unions have consistently accounted for 6 to 9 percent of the national total of credit unions, members, and assets.

Credit union development in Illinois, as in the nation, has accelerated in the postwar period. Total assets climbed more than 500 percent to $360 million between 1946 and 1958. In the same period, membership increased 150 percent to 825,000, and the number of unions rose from 784 to 1,636. The extent of growth in the State can be gleaned from the fact that one of every eight adults in the State is a member today.

In 1958, Illinois ranked first in total number of organizations and followed only California in total amount of savings. Savings averaged about $393 per member, compared with a national average of $366.

The state's unions have nearly $230 million in loans outstanding, a figure which exceeds the total assets of credit unions in every state except California and Michigan. Altogether, unions here made more than 626,000 loans in 1958. The average loan last year was $610.

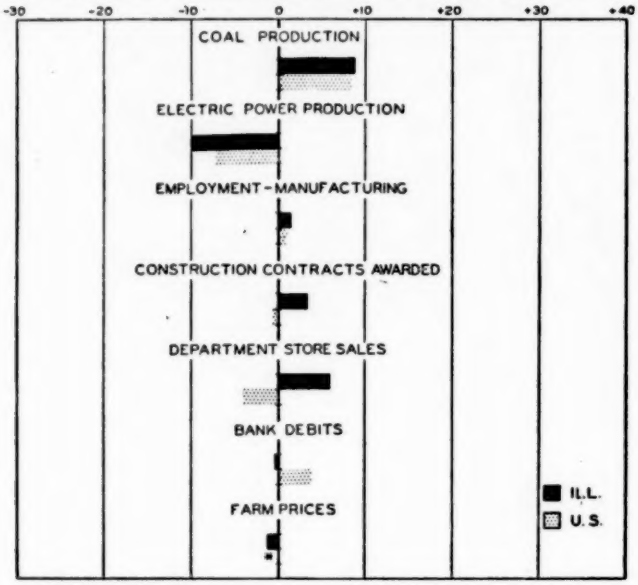
Credit unions in Illinois tend to be related to areas of industrialization rather than to population. Chicago, of course, leads the State in total number of unions, with 650. Following in order of number of unions are Decatur (63), Rockford (44), East St. Louis (43), Peoria (40), Danville (40), Rock Island-Moline (39), Champaign (34), and Springfield (30).

Although the average credit union had assets valued at $220,000 last year, there were 65 unions in the State with more than $1 million in assets. Six of the ten largest unions were in Chicago, but the largest was located in central Illinois. It was the Decatur-Wabash Railroad Employees Union, with nearly $14 million in assets and $12 million in loans. The United Air Lines Employees Union of Chicago was the leading organization in terms of membership, but ranked third in total assets.

STATISTICAL SUMMARY OF BUSINESS ACTIVITY

SELECTED INDICATORS

Percentage changes August, 1959, to September, 1959



*No change.

ILLINOIS BUSINESS INDEXES

Item	Sept. 1959 (1947-49 =100)	Percentage change from Aug. 1959	Percentage change from Sept. 1958
Electric power[1]	227.8	−9.9	+4.3
Coal production[2]	83.1	+8.8	+6.1
Employment—manufacturing[3]	102.4[a]	+1.3	+3.7
Weekly earnings—manufacturing[3]	168.2[a, b]	−0.9	+6.6
Dept. store sales in Chicago[4]	122.0[c]	−3.9	+1.7
Consumer prices in Chicago[5]	129.2	+0.7	+1.4
Construction contracts awarded[6]	383.8	+3.3	+6.7
Bank debits[7]	194.9	−0.2	+4.6
Farm prices[8]	79.0	−1.2	−9.2
Life insurance sales (ordinary)[9]	276.3	−2.0	−4.0
Petroleum production[10]	119.9	+0.1	−0.7

[1] Fed. Power Comm.; [2] Ill. Dept. of Mines; [3] Ill. Dept. of Labor; [4] Fed. Res. Bank, 7th Dist.; [5] U. S. Bur. of Labor Statistics; [6] F. W. Dodge Corp.; [7] Fed. Res. Bd.; [8] Ill. Crop Rpts.; [9] Life Ins. Agcy. Manag. Assn.; [10] Ill. Geol. Survey.

[a] Revised series. [b] Data are for August, 1959; comparisons relate to July, 1959, and August, 1958. [c] Seasonally adjusted.

UNITED STATES MONTHLY INDEXES

Item	Sept. 1959	Percentage change from Aug. 1959	Percentage change from Sept. 1958
	Annual rate in billion $		
Personal income[1]	379.6[a]	− 0.1	+ 4.2
Manufacturing[1]			
Sales	355.2[a]	+ 1.4	+10.9
Inventories	51.8[a, b]	− 0.6	+ 5.3
New construction activity[1]			
Private residential	25.2	− 1.6	+20.3
Private nonresidential	17.2	− 4.9	+ 1.6
Total public	18.8	− 5.2	− 1.5
Foreign trade[1]			
Merchandise exports	16.8[c]	− 4.9	+ 0.0
Merchandise imports	14.3[c]	− 3.7	+23.8
Excess of exports	2.5[c]	−11.4	−52.6
Consumer credit outstanding[2]			
Total credit	48.4[b]	+ 1.0	+11.9
Instalment credit	37.5[b]	+ 1.2	+13.1
Business loans[3]	30.4[b]	+ 1.7	n.a.
Cash farm income[3]	30.9[c]	− 0.3	−22.9
	Indexes (1947-49 =100)		
Industrial production[2]			
Combined index	148[a]	− 0.7	+ 8.0
Durable manufactures	158[a]	− 0.6	+ 9.0
Nondurable manufactures	145[a]	− 0.7	+ 9.0
Minerals	116[a]	− 0.9	− 5.7
Manufacturing employment[4]			
Production workers	98	+ 0.3	+ 3.2
Factory worker earnings[4]			
Average hours worked	101	− 0.2	+ 1.3
Average hourly earnings	166	+ 0.9	+ 3.3
Average weekly earnings	168	+ 0.7	+ 4.6
Construction contracts awarded[5]	309	− 0.8	− 4.9
Department store sales[3]	143[a]	− 4.0	+ 5.9
Consumer price index[4]	125	+ 0.3	+ 1.2
Wholesale prices[4]			
All commodities	120	+ 0.4	+ 0.4
Farm products	89	+ 2.1	− 4.5
Foods	108	+ 1.9	− 3.0
Other	128	0.0	+ 1.7
Farm prices[3]			
Received by farmers	88	0.0	− 6.4
Paid by farmers	119	0.0	+ 0.8
Parity ratio	80[d]	0.0	− 8.0

[1] U. S. Dept. of Commerce; [2] Federal Reserve Board; [3] U. S. Dept. of Agriculture; [4] U. S. Bureau of Labor Statistics; [5] F. W. Dodge Corp.

[a] Seasonally adjusted. [b] As of end of month. [c] Data are for August, 1959; comparisons relate to July, 1959, and August, 1958. [d] Based on official indexes, 1910-14 = 100. n.a. Not available.

UNITED STATES WEEKLY BUSINESS STATISTICS

Item		1959 Oct. 31	Oct. 24	Oct. 17	Oct. 10	Oct. 3	1958 Nov. 1
Production:							
Bituminous coal (daily avg.)	thous. of short tons	1,344	1,350	1,329	1,294	1,267	1,465
Electric power by utilities	mil. of kw-hr	12,978	12,762	12,861	13,086	13,234	12,330
Motor vehicles (Wards)	number in thous.	118	134	158	142	128	120
Petroleum (daily avg.)	thous. bbl.	6,887	6,875	6,839	6,809	6,825	6,911
Steel	1947-49=100	22	22	21	21	21	117
Freight carloadings	thous. of cars	588	607	581	559	573	674
Department store sales	1947-49=100	145	150	160	151	143	136
Commodity prices, wholesale:							
All commodities	1947-49=100	119.3	119.1	119.2	119.2	119.2	119.6[a]
Other than farm products and foods	1947-49=100	128.6	128.5	128.5	128.5	128.4	128.4[a]
22 commodities	1947-49=100	86.9	85.9	85.6	85.6	86.0	86.8
Finance:							
Business loans	mil. of dol.	29,516	29,548	29,704	29,509	29,479	n.a.
Failures, industrial and commercial	number	273	250	252	274	224	299

Source: *Survey of Current Business, Weekly Supplements.*

[a] Monthly index for October, 1958. n.a. Not available.

RECENT ECONOMIC CHANGES

Decline in GNP

The seasonally adjusted annual rate of gross national product fell to $481.0 billion in the third quarter, according to preliminary estimates made by the President's Council of Economic Advisers. The third-period rate represented a decline of $3.5 billion in the value of the nation's output of goods and services from the second-quarter record high. After adjustment for price changes the decrease was even greater; in terms of 1958 prices, GNP fell from $477.8 billion in the spring quarter to $472.0 billion in the July-September period.

GROSS NATIONAL PRODUCT OR EXPENDITURE
(Seasonally adjusted, billions of dollars at annual rates)

	*3rd Qtr.** *1959*	*2nd Qtr.* *1959*	*3rd Qtr.* *1958*
Gross national product	481.0	484.5	444.0
Personal consumption	313.5	311.2	294.4
Durable goods	43.8	44.1	37.1
Nondurable goods	148.2	147.7	143.6
Services	121.5	119.4	115.7
Domestic investment	69.0	77.5	54.2
New construction	41.0	41.0	35.4
Producers' durable equipment	27.0	26.0	22.2
Change in business inventories	1.0	10.4	−3.4
Nonfarm inventories only	.2	9.8	−4.5
Foreign investment	−.5	−1.8	1.6
Government purchases	99.0	97.7	93.8
INCOME AND SAVINGS			
National income	n.a.	403.9	369.5
Personal income	381.0	381.1	363.4
Disposable personal income	335.2	335.3	320.4
Personal saving	21.7	24.1	26.0

* Preliminary estimates by Council of Economic Advisers.

The reduction in GNP was accounted for by a rapid depletion of steel and related inventories. This was in contrast to the sharp accumulation which occurred in the preceding period in anticipation of the steel strike. The annual rate of accumulation of nonfarm inventories was off $9.6 billion during the summer quarter.

As can be seen in the accompanying table, those portions of GNP represented by final demand — consumption, fixed investment, and government purchasing — showed some further expansion during the third quarter. The advances in some of these categories, however, was not as great as had been expected.

Agricultural Production Expands

Farm production this year has been running slightly ahead of 1958. Based on data available as of mid-October, the Agriculture Department reported its index of farm production is expected to be 125 percent of the 1947-49 average for 1959, compared with 124 percent last year and 114 percent in both 1956 and 1957. Almost all of this year's advance has resulted from a substantial increase in the number of livestock on farms. Crop production was maintained at the high levels reached in 1958 when output jumped more than 10 percent.

The increases in production brought sharply lower prices for some products, particularly hogs, broilers, and eggs. By mid-October the index of prices received by farmers for all products had fallen to 235 percent of the 1910-14 average, 14 points under a year ago. Cash marketing receipts from livestock and products in 1959 are below last year's figures, but receipts from crop marketings are about equal to 1958. These changes combined to drop net income of farm proprietors back to the 1955-57 plateau. In 1958 net income rose to over $14 billion. During 1959, however, a decline of about $1 billion in the annual rate of net income was registered in each of the first two quarters. In the third quarter a further drop of $1.8 billion was recorded as the annual rate fell to $10.3 billion. As a percentage of the total national income, income originating in agriculture, including earnings of farm laborers, is expected to fall to 4 percent this year, compared with 5 percent in 1958 and 4.5 percent the year before.

Corporate Profits and National Income

The stimulation of economic activity caused by anticipatory purchasing of primary metals and their products raised corporate profits and national income to new highs in the second quarter. Corporate profits rose to annual rates of $52.6 billion before taxes and $27.0 billion after taxes. After adjustment for the effect of price changes on the dollar value of inventories, corporate profits were at an annual rate of $51.0 billion in the spring quarter, compared with $45.5 billion in the first three months of 1959 and $33.8 billion in the second quarter of last year. The spring-quarter advance was centered in durable goods manufacturing industries where before-tax profits rose more than $4 billion.

National income moved up $14.5 billion to an annual rate of $403.9 billion in the second quarter. Although corporate profits, and hence, total national income figures are not yet available for the third period, signs of a letdown can be noted in data that are available. Incomes from all sources other than corporate profits showed a slight over-all decline of $700 million to $352.2 billion at annual rates in the third period. This compares with advances of $9.0 billion in the second quarter and $7.0 billion in the first three months of this year.

The industry pattern of nonfarm income reflects more clearly the decline in earnings in strike-affected industries. The primary metals manufacturing, mining, and transportation industries accounted for nearly $27 billion, at annual rates, of the total all-industry payroll during the second quarter. In the subsequent three months, however, the payments by these industries fell $3 billion.

Consumer Prices

Prices of consumer goods and services in the United States, as measured by the Labor Department's consumer price index, rose 0.3 percent in September to a record 125.2 percent of the 1947-49 average. The new high represented an increase of 1.2 percent from September of last year.

All major groups of goods and services, with the exception of transportation, contributed to the latest advance. Food and housing prices each matched the over-all gain of 0.3 percent, and prices of apparel rose 0.9 percent during September. Medical and personal care, reading and recreation, and other commodities and services also experienced price increases during the month. In the transportation group, declines of 1 percent in dealers' selling prices for new cars and 0.8 percent in gasoline prices more than offset an advance in used car prices. Compared with a year ago, however, transportation and medical care prices have shown the largest increases, whereas food prices have fallen 1.3 percent.

WHAT DO WE MEAN BY "RESEARCH AND DEVELOPMENT"?*

DAVID NOVICK, Cost Analysis Department, The RAND Corporation

It has become fashionable to speak of the need for more research and development. There has recently been a clamor for more military activity in this field so that we may be better able to protect ourselves. In business it has become the thing to do. There is a seemingly blind belief that by doing more research we will outrun our international competitors and make larger profits.

Numerous studies emphasize the recent marked expansion in R&D effort. Changes in budgetary practice by the Department of Defense have given new sparkle to the rate of growth in this activity; we now speak glowingly of the $3.7 billion budgeted for fiscal 1960 when comparing it with $650 million identifiable as military R&D in fiscal 1950. In the same way we talk of business expansion of R&D from less than $200 million in 1930 to $1 billion several years ago, and to $6 billion today.

Just *how are* the dollars being spent? Are we really spending *more* dollars on essential R&D, or are we merely reclassifying traditional outlays? What is the real nature of the changes they promise? Only with such knowledge can we decide whether we are doing the right things and in the proper quantities.

Perhaps the most revealing statement that has been offered is that of Dr. J. A. Hutcheson, vice president of Westinghouse Electric, who in announcing the company's $185 million 1959 budget for R&D pointed out that to measure research spending as a percentage of sales is meaningless unless the objectives are defined and the figures broken down. He classified his company's proposed program as 2 percent for research not connected in any way with current products but promising for the long-range future, 3 percent for long-range development programs related to products the company will be making five to ten years from now, 6 percent for new knowledge we know we need based on past research, 10 percent for standard product development, and 79 percent for development of equipment to customers' orders. For most firms, general statements of X million dollars for R&D are even more inappropriate than in the Westinghouse case as a measure of effort applied to advancing science.

There is such great diversity in the resources consumed and in the things produced by the many industrial firms and government agencies which carry on research, development, test, and evaluation that it would be surprising if common accounting practices were followed to identify them. Since there is no common practice in establishing the basis for these charges, it is difficult to say whether or not the figure commonly bandied about for 1959, $10 billion for R&D, is a significant measure of national effort. All that one can say with certainty is that the present situation is confused and confusing.

Growth of R&D Expenditures

The best estimates available show that there has been a tremendous growth in R&D. Between 1930 and 1940, outlays doubled. In the next year, when defense spending for R&D became significant, total R&D rose from $345 million to $900 million. By 1950, R&D was three times its 1941 level, and since then it has more than tripled again. Thus our present $10 billion for R&D are sixty times greater than they were thirty years ago.

There is some necessary uncertainty about any such portrayal of growth, since the data are derived from various sources and are not entirely comparable. The jump from 1940 to 1941 (see chart), although no doubt largely the result of new programs, may to some extent reflect a statistical discontinuity. The break in trend after 1954 reflects the fact that the Revenue Act of 1954 gave corporations liberty to "expense" R&D outlays.

While the large growth in R&D cannot all be attributed to statistical delusion, there is much room for doubt as to what these data actually indicate. It is evident that price change tends to overstate the growth as measured by expenditures. To adjust properly for price changes, an index based on a combination of salaries of research personnel and the hardware used in R&D would have to be used. In the absence of such an index, the series shown was adjusted by prices for producers' durable equipment. The results given by other available adjustment factors are not widely divergent. All roughly cut the growth of R&D expenditures in half. Thus the sixty-fold increase between 1930 and 1958 is reduced to a twenty-five to thirty fold increase in real terms.

Another measure of the growth in R&D is the change in the number of scientists and engineers engaged in research. This measure has the advantage of not being influenced by price changes and also of being unaffected by variations in accounting procedures. It has the further advantage (or disadvantage) of not reflecting changes in the hardware cost of R&D. From 1941 to 1952 the number of research engineers and scientists doubled — a somewhat slower growth than that of adjusted R&D outlays.

All of the available statistical data demonstrates that one of the difficulties in interpreting R&D data is that we are not certain of what has been measured. While the separation of basic research from applied research and development is a step toward making these data more meaningful, the definition of basic research also presents some problems. For example, the cost of censuses is included in the over-all federal government estimates. To be sure, census taking is an important research undertaking but it is substantially different from many other kinds of research and is just one more indication of the activities in R&D. Hence, we can only be very dubious about the usefulness of the existing data as meaningful guides for allocation decisions in the research area.

Science, Research, and Development

A major difficulty in measuring R&D activity, which neither the expenditure nor the personnel data can take account of, is the ambiguity of terms. Although we assume that we know what we mean when speaking of science, basic research, applied research, development, test, and evaluation, it is not likely that the meaning would be the same to a nuclear physicist or a marketing expert. We are not likely to identify the effort of every doctor treating an individual case of cancer as research even though it adds significantly to our knowledge, since the medical profession calls this "practice" rather than "research." But we include university fellowships and marketing research wherever it occurs, since these are called research.

The line of demarcation between development and production is thin and elusive, and may often be drawn in terms of company policy rather than any clear-cut definition. Some of the "growth" may be the result of the new respectability which R&D has attained, which

* Presented at the annual meeting of the Associated University Bureaus of Business and Economic Research, Allerton House, Monticello, Illinois, October 28, 1959.

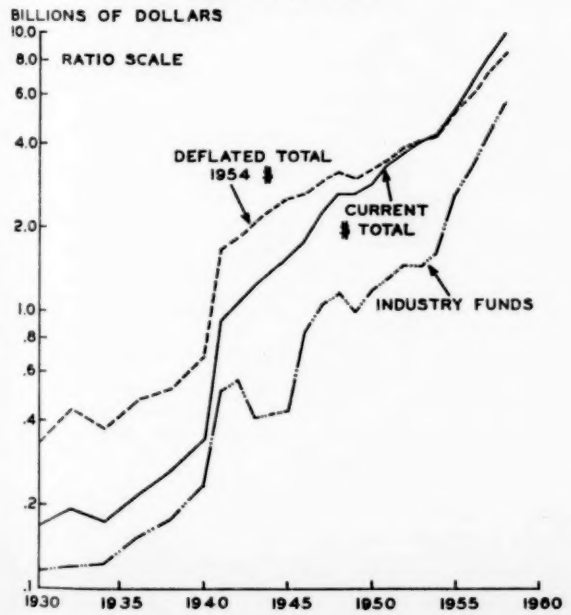
probably has shifted into R&D some activities which were previously under some other classification. A literature search establishes clearly why an individual who considers himself a scientist may be described by others as an engineer, a technician, or even just a businessman. Only the *Dictionary of Contemporary American Usage* need be quoted here:

Research has become very popular in the United States since the outbreak of World War II. As Henry D. Smyth has observed, the idea that the object of research is new knowledge does not seem to be widely understood and "a schoolboy looking up the meaning of a word in the dictionary is now said to be doing research." Indeed it has been debased even further. *Research* is frequently used to describe reading by those to whom reading, apparently, is a recherché activity and for many a graduate student it is a euphemism for wholesale plagiarism.

In attempting a description of the subject area, science seems the obvious starting point since it is the spring from which flow R&D in any and all of their ramifications. Much of our confusion arises from lack of recognition of the time and evolution factors which characterize the changes as the flow proceeds from the spring of science to the ocean of everyday application. The "hare-brained ideas" of one period are the "sound" practical and useful tools of a later period. Although we are not now likely to refer to Darwin, Einstein, or Newton as "hare-brained," their original work has the identifying mark of seeking understanding of the universe and not particular uses for the principles propounded.

In this context we can say science seeks an understanding of nature, and the appliers use it to alter or change nature. Hence, lack of knowing probable application seems an appropriate starting point. A look at the classifications now used suggests that basic research is everyone's starting point and is characterized as *promise* for the long-range future. As we go down the lists of activities labeled research, application becomes more important, whether for development of custom-tailored equipment, pilot plant research, solving technical problems in manufacture and maintenance of existing products, sales research, or commercialization. Application, and the degree of certainty assumed in attaining it, seems to be a likely standard for setting up our classification.

RESEARCH AND DEVELOPMENT EXPENDITURES



The reason for using this approach is to facilitate the setting of milestones from which we may better determine where we are in the R&D process and to provide a better framework for making decisions. Although our R&D outlays have risen from $200 million in 1930 to $10 billion in 1958, it may very well be that practically all of this increase is in the application of principles established thirty or more years ago and that the effort devoted to the search for BIG IDEAS is not significantly larger today than in 1930. We still have to determine whether we are putting enough into the areas where application is uncertain, and especially whether our method of allocation and management indicates the kind of promise for the future we would like to have.

Steps in Creating New Products

A recent addition to commonplace statements is: "In lead time, that is, from basic concept to operations, the Soviet Union is way ahead of us. It takes us 10 years but the Soviet Union does it in about 5 years." This seems simple and straightforward until one raises the question of what each country accomplishes in these markedly different periods. In this case it is complicated by the frequently voiced corollaries: "We know that we are ahead of the USSR in basic research and we are far ahead of them in production." Taken together, these statements imply that the Soviet is ahead of us only in administering the implementing actions and that this is the significant difference. I wonder if that is the case.

Like most other Americans, I know very little about the USSR. However, articles in magazines and newspapers, and friends who have been in Russia or talked to Russian visitors in the last few years, lead me to believe that we are not ahead of them in production techniques — probably the easier of the two to appraise — and are not significantly ahead in basic research.

It seems to me that, on a comparable basis, lead time in the USSR is just about the same as in the US. If they are ahead in getting final product, it is because they (1) probably have a more direct approach, placing more emphasis on early application; (2) are more willing to gamble either on resource cost or on performance; (3) seem to freeze design and make fewer changes once a decision to produce has been made; and (4) have continuity in program and personnel. If these are in fact the practices in the USSR, they indeed have shortened lead time. We tend to seek full understanding of a principle before going all out for it. Although we gambled on both resource cost and product performance in attaining our World War II achievements, we have been cautious since 1945. Our desire for perfection and certainty also leads to continual modifications in equipment even after a decision has been made to procure for operation.

Lead time in a physical sense is a real thing and is not easily shortened. The changes which the USSR seemingly has introduced are both intellectual and administrative and are available to those who are willing to take risks. Understandingly or not, the Russians apparently push ahead — steadily and continuously; we seek assurance before making our commitments and proceed in a start-then-stop and stop-then-start manner.

To get this difference more clearly in mind we must better understand (1) what is done in each of the separate steps we lump in R&D: (2) what can be expected as the product of each stage; and (3) probably most importantly, the degree of uncertainty or risk associated with each level of expectation. To that end the following schema attempts to show the steps, activities, and promises of R&D:

Step I. Basic or Experimental Research and Development. Understanding of the universe and organization of knowledge about it are sought. Its promise is great but not identified to specific purposes and the possibility of fulfillment is *highly uncertain.*

Step II. Applied Research, Advanced Development, and Basic Evaluation and Testing. Specific potentials are identified with a view to developing devices or methods for utilizing the new general knowledge obtained in Step. I. Application or usefulness is identified but the economy, efficiency, and acceptability of the proposals remain uncertain. Promise is for great new things.

Step III. Product Development, Testing, and Evaluation and Pilot-Production. Specific devices or methods appear as likely solutions but must be brought reasonably close to final application to determine effectiveness, economy, and acceptability. Do-ability has been established and major advances are promised.

Step IV. Product Application Research, Applied Testing, and Evaluation. New uses and applications or modifications of uses are sought for existing methods, products, or components. Work may result in substantial benefits to users or producers. Some success is reasonably assured since it is evolutionary rather than revolutionary.

One reason the Step I, or Brave New World, outlay is small is that the type of activity is normally low in its resource demands. Only occasionally, as in the newly approved Project "M" linear accelerator at Stanford, do expenditures reach the multimillion dollar level. Much of our science in this sense has been imported — chiefly from Europe — either as principles or as scientists who developed their ideas here. The bulge in our scientific discoveries in the last 25 years is probably more the result of European scientists coming to this country to escape totalitarianism than of any real expansion in our indigenous capability. Einstein, von Neumann, Teller are a few of the scientists who have been transplants from Europe. There is no assurance that we have yet developed here the essential "climate" for basic research.

Step II is three times Step I according to my guess. It is still small for the reasons applied to Step I, but becomes larger because in general more people are available and capable for this type of work and because more elaborate equipment and methods can be used. More people become available as guidance and direction are more easily established. Although the equipment in many cases is simple relative to that involved in subsequent steps, it is likely to be more complex, used in larger quantity, and more costly than that used in Step I. Illustrative was the estimate in 1940 that $100,000 would be required to attempt the first nuclear chain reaction. Billions were required for Step III in nuclear fission.

The relationship between Steps II and III in the atomic development is representative of the general military interaction. In the atomic case, and in many modern weapon developments, the size of the resource demands becomes spectacular because of the time concentration. When time pressures are not so great, the build-up is more gradual and over the years involved in a leisurely approach many of the problems in one development are solved as part of other researches.

Most research expenditures are in Step IV for a variety of reasons. First and foremost is the reasonable assurance of success since the changes sought are small order variations in proven methods, devices, and approaches. Second, because so much is already known, very large numbers of people are available for and interested in this kind of work. Third, in most activities involved in equipment, cosmetics, or social services, whether production, management, or marketing, making improvements and changes of this kind is the essence of day-to-day business or professional activity.

Need for Reappraisal

Identification based on present practices makes it difficult to measure research in any meaningful way. We regard all research as good and impute to all of it the value it has achieved when identified with the Great Researchers — Darwin, Einstein, Newton, and so on. Although the available data do not permit quantitative analysis in specific terms, it is my guess that our $10 billion probably is distributed as follows:

Step	*Promise*	*Guessed distribution*
I	Brave New World	$ 100,000,000
II	Possible use of new discovery	300,000,000
III	Application of new knowledge	2,600,000,000
IV	Improved use of existing knowledge	7,000,000,000

This may well be disturbing to those who view the world's future as a struggle for scientific achievement. Assuming that something like $400 million is what we now are putting into the search for new knowledge with dramatic and exciting implications, and adjusting this for price change and Big Wheel and Big Deal administrative practices, a basic question is raised as to how much more we really are doing now than we were ten or twenty years ago.

For the aggregate measurement we can take or leave the $10 billion cited for 1959 and the changes in such totals over the years. As now compiled it is a dubious measure of national resources allocated to basic improvements to the United States of A.D. 1980 or 2000. Classification problems like those occasioned by the Internal Revenue Act of 1954 and by the Department of Defense budget change for fiscal 1960 overshadow the validity of specific dollar statements over any period of time.

We do know R&D expenditure is going up, perhaps largely because we think it should be going up. We do not know how much of it represents needed or desired contributions to the Brave New World and how much a reclassification of activities heretofore identified as manufacturing and education in other accounts. Whether or not the expansion carries the magic we want to impute to it is not easy to ascertain.

In the last half-century there have been four major factors in scientific expansion in the United States: World War I, World War II, the Cold War, and the transplanting of European scientists to this country. Whether or not these provide sufficient basis for success just by our putting in more dollars is not at all clear, particularly if most of the increase in expenditures is merely reclassification in response to a new fashion.

If we are to make the most effective allocation of resources to R&D, a real research effort and one basic in its approach must be undertaken. The important issue is, Are we putting enough effort into research aimed at the long-range future, particularly that which goes beyond what we now visualize as characteristic of the products we can identify as those we shall be making five to ten years from now? Perhaps as is so often the case, the nation must first determine its objectives and policy. On that basis we may then be able, first, to establish meaningful classifications of research activities and measurements of the factors in their rate of growth and, second, to determine the allocation of national resources which is being made and should be made to these varying and distinctive types of specialized activities.

BUSINESS BRIEFS

PUBLICATIONS AND DEVELOPMENTS OF BUSINESS INTEREST

Intercity Trucking

According to the American Trucking Association, the volume of intercity freight hauled by truck during the second quarter of 1959 amounted to 93 million tons. This represents an increase of 21 percent over the same quarter of 1958. This gain in tonnage raised the American Trucking Association's second-quarter truck tonnage index to an all-time high of 210, an increase of 28 points over the previous high recorded in 1956.

General freight carriers, accounting for almost half of the total tonnage, reported an increase of 26 percent. Liquid petroleum carriers, the second largest group with almost 25 percent of total tonnage, showed a rise of 9 percent over the second quarter of 1958. Motor vehicle carriers showed gains of 72 percent, and heavy machinery haulers experienced a 52 percent advance. Carriers of building materials, the only group to report decreased tonnage from the second quarter of 1958, were down 23 percent.

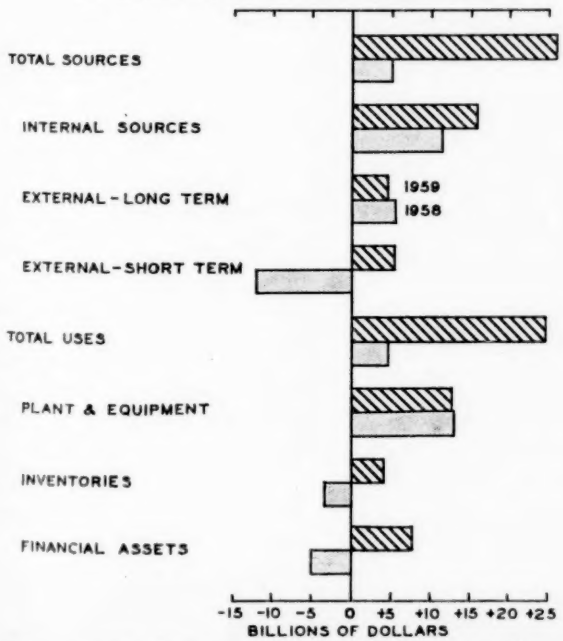
Changes in Federal Debt Outstanding

Data released in the October issue of the *Treasury Bulletin* show that the total federal debt outstanding climbed from $275.6 billion in July, 1958, to $288.8 billion in July, 1959. In addition to this increase, there has been a shift in the composition of ownership and the maturity structure of the debt.

In July, 1959, 51 percent of the total debt was held by private nonbank investors such as individuals, nonfinancial corporations, and insurance companies, whereas in July, 1958, the holdings of such investors were about 47 percent. At the same time, the share of the federal debt held by commercial banks declined 3 percentage points to 21 percent, and that of the federal government investment accounts decreased to 19 percent. On the other hand, Federal Reserve holdings increased slightly.

The maturity structure of the interest-bearing public debt has shifted more toward shorter-term securities. The average length of maturity was 4 years and 5 months in July, 1959, compared with 5 years and 2 months in July, 1958. The amount of outstanding securities due within one year increased from 41 percent in July, 1958, to 43 percent in July, 1959, and the proportion of the securities maturing in one to five years rose 6 percentage points to 32 percent over the same period. The largest percentage decrease in security holdings was in those where maturity was longer than ten years.

SOURCES AND USES OF CORPORATE FUNDS
1st HALF, 1958, AND 1st HALF, 1959



Source: U.S. Department of Commerce, *Survey of Current Business*, October, 1959.

Mail Sent Electronically

Business Week recently reported that Western Union and the Post Office Department are planning to bring facsimile transmission systems into public use. In facsimile transmission, an electronic device scans the printed material and picks up a picture. This electronic picture is transmitted across country by wire or microwave relay and then is reproduced on sensitive paper at the other end. Such systems have been available for some time to business firms through facilities rented from Western Union.

Beginning in December, 1959, Western Union plans to make facsimile transmission available to the general public by linking New York, Washington, Chicago, San Francisco, and Los Angeles into a facsimile network. Other cities will be joined later as demand warrants.

The Post Office Department has actually transmitted mail between Washington and Los Angeles by facsimile test equipment. A complete system, however, is still some five or more years away. Ultimately, the Post Office intends to develop a network of facsimile connections between 178 strategic cities serving nearly two-thirds of the national population. It is reported that with such a system typed or handwritten mail could be sent at an estimated cost no greater than the present airmail rate of 7 cents an ounce.

Business Financing

Corporations added nearly $25 billion to their physical and financial assets in the first half of 1959, a record rate for that part of the year, according to the October *Survey of Current Business*. In the first half of 1958, the net expansion was slightly less than $5 billion.

Inventory accumulation of $4 billion in the first six months of 1959 contrasts with liquidation of $3 billion in the same period a year ago. Financial assets took a similar swing, showing a net increase of nearly $8 billion in the first half of 1959 after a net decrease of $5 billion in the same part of 1958 (see chart). These two items account for practically all the change from 1958 to 1959.

Corporate funds in the first half of 1959 came mostly from internal sources; such sources provided $16 billion, or 61 percent of total funds. Corporations raised less than $5 billion of long-term funds from external sources, with stock and bond issues contributing about equally. Funds from external short-term sources increased to $5.5 billion in the first part of 1959, whereas during the first half of 1958 a reduction in short-term obligations amounting to $12 billion occurred.

LOCAL ILLINOIS DEVELOPMENTS

In September the major indexes of Illinois business showed diverse movements. Coal production increased 9 percent and construction contracts awarded rose 3 percent. The most important decline was in electric power production, which dropped 10 percent. Decreases of 4 percent and 2 percent, respectively, were experienced in seasonally adjusted department store sales in Chicago and life insurance sales during the month.

Chicago — A Big Natural Gas Market

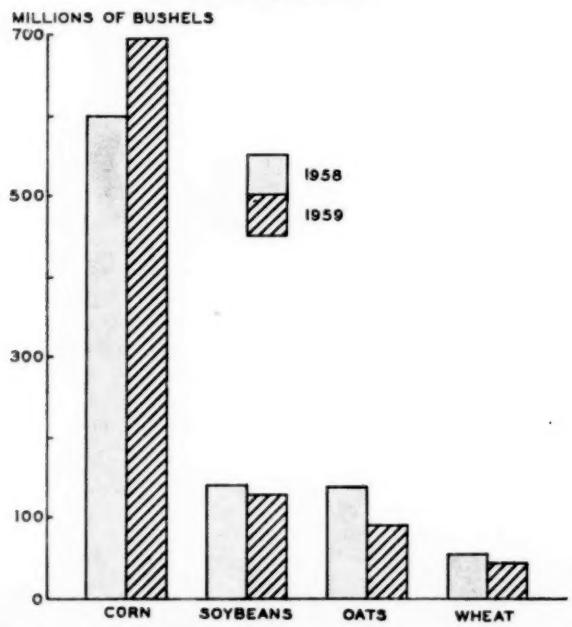
In October of this year, the Midwestern Gas Transmission Company completed a new 30-inch, 350-mile pipeline from Portland, Tennessee, to the Chicago area at a cost of nearly $48 million. This new system will be pumping about 260 million cubic feet of natural gas per day into the Chicago area by the end of the year. At the same time, the Northern Illinois Gas Company put into operation a new 22-inch, 140-mile pipeline between East Dubuque, Illinois, and the Chicago area at a cost of nearly $13 million. This will supply 50 million additional cubic feet of natural gas per day to the Chicago area.

These two new facilities will increase the Chicago area's natural gas supply by about one-fourth. Within three years, it is estimated that the peak flow of natural gas into the Chicago area will be at least 1,700 million cubic feet per day, as compared with a peak flow of about 1,300 million cubic feet per day at the present time.

Prospective Crop Yields

According to the Illinois Cooperative Crop Reporting Service, Illinois has a prospective corn crop in 1959 amounting to 696 million bushels. This would exceed the harvest of a year ago by nearly 100 million bushels, thus setting a new record and becoming the first Illinois corn crop to exceed 600 million bushels (see chart). The great advance in corn production is due entirely to an increase in acreage from 8.7 million acres in 1958 to 10.2 million acres in 1959.

PRODUCTION OF FOUR PRINCIPAL CROPS IN 1958 AND 1959



* Preliminary estimates.
Source: Illinois Cooperative Crop Reporting Service.

The 1959 soybean crop is now estimated at 127 million bushels, a decline of nearly 10 percent from last year's record high. The prospective oat production is estimated at about 90 million bushels, which is 35 percent below the 1958 yield. This year's wheat crop is expected to be nearly 43 million bushels, as compared with 54 million bushels in 1958.

It is estimated that the northern fourth of the State will produce about 34 percent of the state's 1959 corn crop and 57 percent of the oat production. The southern half should account for nearly 70 percent of the state's wheat production and the central region is expected to produce about 70 percent of the soybean crop.

Average Weekly Earnings

Average weekly earnings in manufacturing industries in Illinois amounted to $96.74 during the first six months of 1959, compared with $87.87 in the first half of 1958. This increase of $8.87 reflects gains of $10.64 per week in durable goods manufacturing and $5.23 per week in nondurable goods production. Workers in the durable goods industries averaged $100.04 per week in the first half of 1959, while those in the nondurable goods industries averaged $90.43 per week.

The advance in average weekly earnings was due to significant increases both in working hours and in hourly earnings. Average weekly hours worked rose from 38.6 in February, 1958, to 41.3 in June, 1959. Average hourly earnings rose from $2.25 in January, 1958, to $2.39 in June, 1959.

Average weekly earnings vary widely among the different manufacturing industries. In June, 1959, workers in the primary metal industries and in petroleum refining and related industries had the highest average weekly earnings, amounting to $119.86 and $115.39 respectively. At the same time, workers in the apparel and other finished textile products industries earned an average of only $59.00 per week, and workers in the leather and leather products industries received an average of $66.29 per week.

Chicago Improvements

The Department of City Planning of Chicago has prepared an outline of a capital improvement program requiring the expenditure of $751 million on public improvements in Chicago from 1959 through 1963. About $196 million will be spent by the end of 1959.

The plan calls for about $320 million, or 43 percent of the total, to be spent on improvements of streets, bridges, viaducts, and expressways. Chicago's three airports are to receive $122 million, of which 93 percent will be used to develop O'Hare-Chicago International Airport. Other projects in the plan include sewer and filtration plant construction, extension of water mains, and improvements in public buildings and park facilities.

In addition to the city projects, the capital improvements program describes the planned construction projects of seventeen governmental agencies other than the city of Chicago, which will affect the area. During the next five years, projects scheduled by the Chicago Housing Authority, the Chicago Land Clearance Commission, and the Community Conservation Board will cost about $350 million, and the other fourteen agencies have scheduled programs costing about $838 million. Thus the total programmed for the Chicago area by governmental agencies other than the city of Chicago amounts to $1,188 million.

COMPARATIVE ECONOMIC DATA FOR SELECTED ILLINOIS CITIES

September, 1959

		Building Permits[1] (000)	Electric Power Consumption[2] (000 kwh)	Estimated Retail Sales[3] (000)	Department Store Sales[4]	Bank Debits[4] (000,000)	Postal Receipts[5] (000)
ILLINOIS		$48,136[a]	1,262,719[a]	$502,108[a]		$17,035[a]	$15,970[a]
Percentage change from	Aug., 1959	+14.6	+3.0	n.a.	+6	−0.2	+11.9
	Sept., 1958	+54.1	+11.1	+0.9	+2	+4.6	+8.8
NORTHERN ILLINOIS							
Chicago		$34,033	906,636	$359,175		$15,528	$14,024
Percentage change from	Aug., 1959	+10.7	+4.5	n.a.	+7	−0.7	+14.0
	Sept., 1958	+69.1	+7.4	−0.4	+2	+4.2	+9.8
Aurora		$ 901	n.a.	$ 8,469		$ 83	$ 144
Percentage change from	Aug., 1959	+47.0		n.a.	+2	−1.9	−3.5
	Sept., 1958	+3.8		+5.1	+5	+18.6	−0.0
Elgin		$ 562	n.a.	$ 5,816		$ 50	$ 87
Percentage change from	Aug., 1959	+24.6		n.a.	n.a.	−9.5	−29.0
	Sept., 1958	+72.4		+1.3		+12.0	−1.5
Joliet		$ 874	n.a.	$10,035		$ 89	$ 103
Percentage change from	Aug., 1959	+73.1		n.a.	+8	+0.9	+10.0
	Sept., 1958	+48.1		+9.3	+7	+13.1	+21.4
Kankakee		$ 264	n.a.	$ 4,823		n.a.	$ 62
Percentage change from	Aug., 1959	+175.0		n.a.	n.a.		+15.0
	Sept., 1958	−20.7		+7.8			+8.1
Rock Island-Moline		$1,976	26,914	$12,228		$ 116[b]	$ 173
Percentage change from	Aug., 1959	+108.7	−10.0	n.a.	n.a.	+1.1	+26.1
	Sept., 1958	+59.0	+4.0	+18.5		+12.1	+19.6
Rockford		$1,381	53,344[c]	$16,552		$ 196	$ 210
Percentage change from	Aug., 1959	−71.4	+6.6	n.a.	−9[c]	−0.7	−0.9
	Sept., 1958	+27.6	+20.1	+10.8	−1[c]	+14.4	+1.7
CENTRAL ILLINOIS							
Bloomington		$ 375	9,675	$ 5,056		$ 80	$ 110
Percentage change from	Aug., 1959	+2.7	−2.2	n.a.	n.a.	+9.4	+23.1
	Sept., 1958	+120.6	+17.5	−1.9		+12.1	+11.4
Champaign-Urbana		$ 663	16,127	$ 6,638		$ 85	$ 110
Percentage change from	Aug., 1959	+84.2	+3.6	n.a.	n.a.	+15.7	+26.4
	Sept., 1958	+107.2	+25.9	−7.4		+15.3	+4.7
Danville		$ 268	15,592	$ 5,797		$ 53	$ 66
Percentage change from	Aug., 1959	+65.4	−0.4	n.a.	−8	+12.1	−8.2
	Sept., 1958	−11.3	+14.9	+0.3	+2	+7.9	+1.1
Decatur		$ 417	40,377	$10,616		$ 126	$ 115
Percentage change from	Aug., 1959	−24.3	+5.6	n.a.	+6[c]	+9.7	−3.9
	Sept., 1958	−50.4	+13.6	−4.5	0[c]	+3.1	−11.5
Galesburg		$2,746	10,814	$ 4,428		n.a.	$ 43
Percentage change from	Aug., 1959	+853.5	+7.7	n.a.	n.a.		+1.5
	Sept., 1958	+521.3	+13.0	+0.9			−9.0
Peoria		$ 780	68,587[c]	$16,730		$ 244	$ 259
Percentage change from	Aug., 1959	+52.6	−0.2	n.a.	−2[c]	+7.6	−7.9
	Sept., 1958	−76.9	+27.1	+6.6	+3[c]	+3.3	−1.0
Quincy		$ 205	13,455	$ 5,077		$ 48	$ 71
Percentage change from	Aug., 1959	+15.2	−0.9	n.a.	−2	+5.1	+15.4
	Sept., 1958	−13.1	+30.4	+7.2	−9	+6.3	+1.3
Springfield		$2,297	44,063[c]	$12,686		$ 149	$ 242
Percentage change from	Aug., 1959	+70.4	−8.7	n.a.	−2[c]	+13.3	−20.7
	Sept., 1958	+340.9	+17.0	−2.6	+3[c]	+16.3	−5.1
SOUTHERN ILLINOIS							
East St. Louis		$ 46	18,017	$ 8,888		$ 141	$ 71
Percentage change from	Aug., 1959	−69.3	−0.5	n.a.	n.a.	+2.5	+5.2
	Sept., 1958	−78.7	+18.5	+5.0		−9.4	+6.2
Alton		$ 114	25,000	$ 4,823		$ 48	$ 34
Percentage change from	Aug., 1959	−27.8	−11.4	n.a.	n.a.	+7.8	+5.7
	Sept., 1958	+16.3	+72.2	+9.4		+12.6	+2.2
Belleville		$ 234	14,117	$ 4,271		n.a.	$ 44
Percentage change from	Aug., 1959	−9.0	+11.3	n.a.	n.a.		−2.6
	Sept., 1958	+47.2	+27.5	−3.1			−2.6

[a] Total for cities listed. [b] Includes East Moline. [c] Includes immediately surrounding territory. n.a. Not available.

Sources: [1] U. S. Bureau of Labor Statistics. Data include federal construction projects. [2] Local power companies. [3] Illinois Department of Revenue. Data are for August, 1959. Comparisons relate to July, 1959, and August, 1958. [4] Research Departments of Federal Reserve Banks in Seventh (Chicago) and Eighth (St. Louis) Districts. Department store sales percentages rounded by original sources. [5] Local post office reports. Four-week accounting periods ending September 18, 1959, and September 19, 1958.

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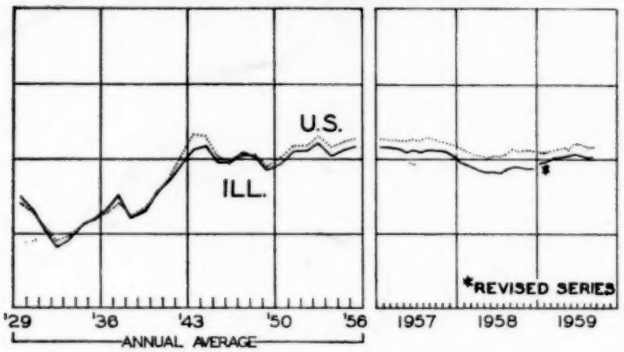
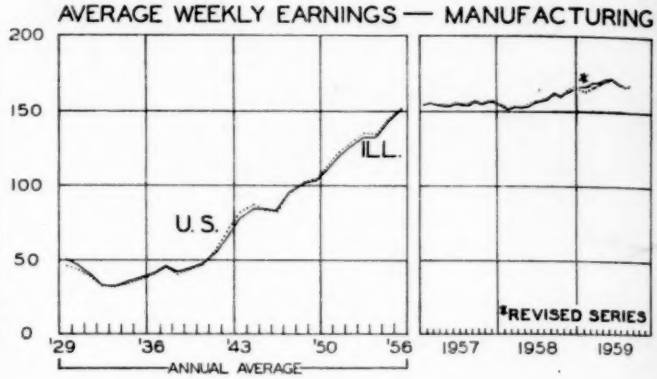
INDEXES OF BUSINESS ACTIVITY

1947-1949 = 100

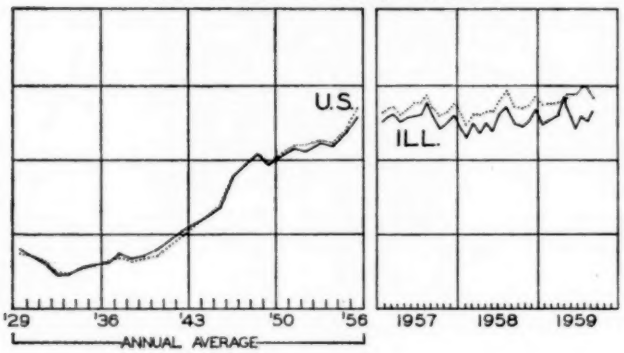
EMPLOYMENT MANUFACTURING



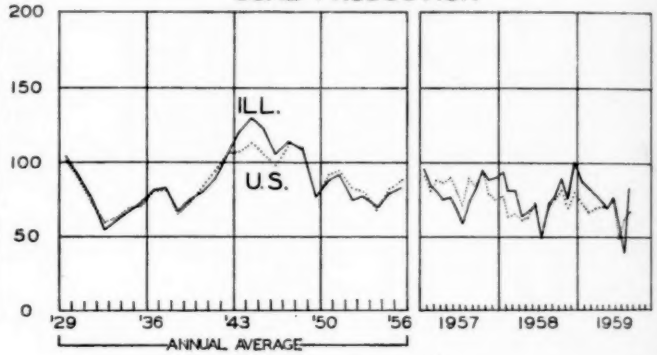
AVERAGE WEEKLY EARNINGS — MANUFACTURING



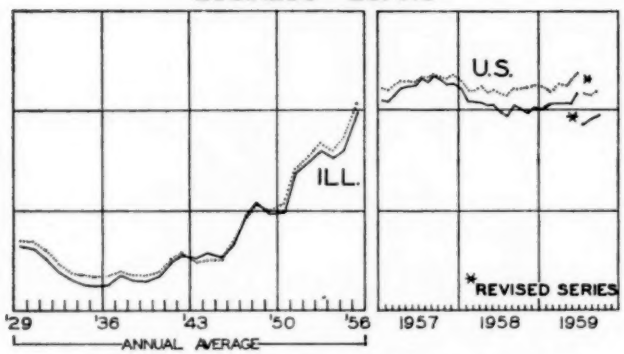
DEPARTMENT STORE SALES



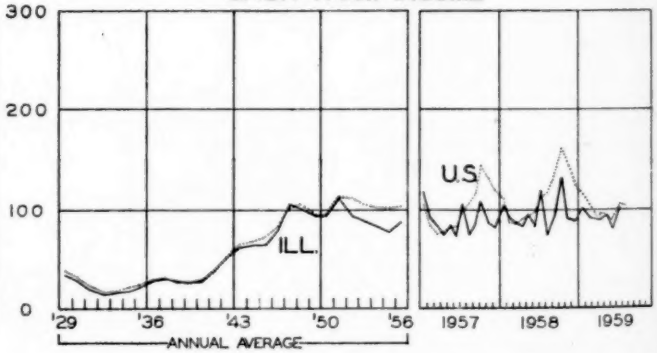
COAL PRODUCTION



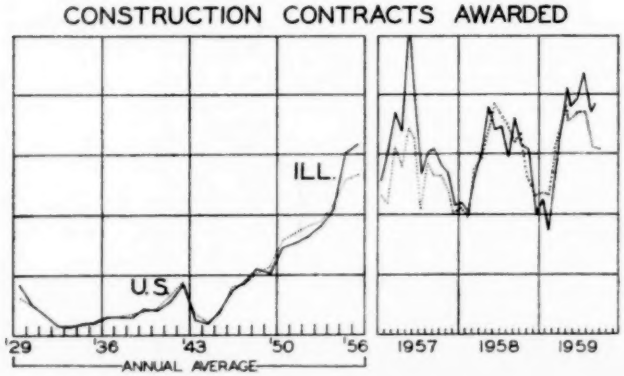
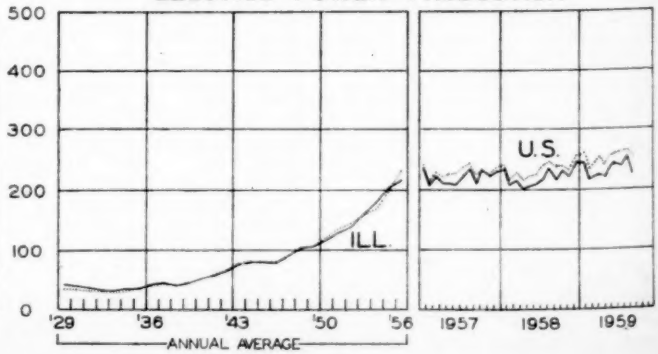
BUSINESS LOANS



CASH FARM INCOME



CONSTRUCTION CONTRACTS AWARDED



ELECTRIC POWER PRODUCTION